



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,821	01/22/2004	Tapani Ryhanen	915-001.026	4996
4955 7590 10/03/2008 WARE FRESSOLA VAN DER SLUYS & ADOLPHSON, LLP BRADFORD GREEN, BUILDING 5 755 MAIN STREET, P O BOX 224 MONROE, CT 06468				
			EXAMINER RUSH, ERIC	
			ART UNIT 2624	PAPER NUMBER
			MAIL DATE 10/03/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/763,821

**Applicant(s)**

RYHANEN ET AL.

**Examiner**

ERIC RUSH

**Art Unit**

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-44 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-44 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☒ Certified copies of the priority documents have been received in Application No. 10/763,805.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/5508)  
Paper No(s)/Mail Date 12/27/2007; 9/23/2004; 5/24/2004; 2/23/2004  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_



## DETAILED ACTION

### *Double Patenting*

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 1 and 24 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/763,805. Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1 and 24 of the instant application and claim 1 of application 10/763,805 are directed to sensors comprising interconnecting wiring embedded within an integrated module and at least one sensor. The claims differ in that the instant application requires a driver electrode, but it would have been obvious to one of ordinary skill in the art at the time of the invention to

include a driver electrode to facilitate the activation of the sensor. Claim 24 differs in that it is a method and not an arrangement but it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the disclosed method in view of the arrangement claimed. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

With respect to claims 2-23 and 25-44: Claims 2-23 and 25-44 are also provisionally rejected on the same ground of non-statutory obviousness-type double patenting as being depended upon a rejected base claim, but would be withdrawn from the rejection if their base claims overcome the provisional rejection by the timely filing of a terminal disclaimer.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 – 3, 9 – 13, 18, 24-31, 38 – 40 and 42-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Salatino et al. U.S. Patent No. 5,862,248.

- With regards to claim 1, Salatino et al. teach a fingerprint sensor arrangement comprising at least one driver electrode and at least one sensor electrode for a capacitive measurement, and an integrated signal

processing circuit for the measurement of signals from the electrodes, and interconnecting wiring between the electrodes and the integrated circuit, characterized in that the at least one driver electrode, (Salatino et al., Column 7 Lines 19 - 37) the at least one sensor electrode, (Salatino et al., Column 7 Line 52 – Column 8 Line 18) said signal integrated circuit and said interconnecting wiring are embedded within an integrated module. (Salatino et al., Column 8 Lines 31 – 58, Column 9 Lines 3 – 41, Column 10 Lines 43 - 62)

- With regards to claim 2, Salatino et al. teach an arrangement according to claim 1, characterized in that said electrode and said integrated circuit are coupled with a substrate, (Salatino et al., Column 7 Lines 3 – 30) the substrate comprising said wiring between the electrodes and the integrated circuit. (Salatino et al., Column 8 Lines 31 – 58, Column 10 Lines 10 - 62)
  
- With regards to claim 3, Salatino et al. teach an arrangement according to claim 2, characterized in that the substrate comprises the at least one driver electrode, said at least one sensor electrode, or both. (Salatino et al., Column 7 Lines 3 - 37)

- With regards to claim 9, Salatino et al. teach an arrangement according to claim 1, characterized in that said interconnecting wires are metallizations between polymer layers. (Salatino et al., Column 10 Lines 10 - 62)
  
- With regards to claim 10, Salatino et al. teach an arrangement according to claim 1, characterized in that said at least one driver electrode and/or said at least one sensor electrode is metallization between polymer layers. (Salatino et al., Column 7 Lines 19 – 51, Column 10 Lines 10 – 62)
  
- With regards to claim 11, Salatino et al. teach an arrangement according to claim 1, characterized in that it comprises guard rings in the vicinity of the at least one driver electrode, in the vicinity of at least one sensor electrode, or both. (Salatino et al., Column 7 Line 38 - Column 8 Line 15)
  
- With regards to claim 12, Salatino et al. teach an arrangement according to claim 11, characterized in that said guard ring is metallization and the arrangement comprises an insulating polymer layer between the guard ring metallization and the sensor electrode. (Salatino et al. Column 7 Lines 19 – 30, Column 7 Line 52 – Column 8 Line 15)

- With regards to claim 13, Salatino et al. teach an arrangement according to claim 1, characterized in that said integrated module is encapsulated with injection molded polymer. (Salatino et al., Column 9 Lines 3 - 40)
- With regards to claim 18, Salatino et al. teach an arrangement according to claim 1, characterized in that said sensor comprises one driver electrode and a row of sensing electrodes. (Salatino et al., Column 7 Lines 19 – 30, Column 7 Line 52 – Column 8 Line 15)
- With regards to claim 24, Salatino et al. teach a method for producing a fingerprint sensor, characterized in that the method comprises the following steps: providing a signal processing integrated circuit, (Salatino et al., Column 7 Lines 19 – 37) providing at least one driver electrode, (Salatino et al., Column 7 Lines 19 - 37) providing at least one sensor electrode, (Salatino et al., Column 7 Line 52 – Column 8 Line 18) encapsulating said integrated circuit, said at least one driver electrode and said at least one sensing electrode into an integrated module. (Salatino et al., Column 8 Line 45 –Column 9 Line 29)
- With regards to claim 25, Salatino et al. teach a method according to claim 24, characterized in that said step of encapsulating comprises a step of



encapsulating into polymer. (Salatino et al., Column 8 Line 45 –Column 9 Line 29)

- With regards to claim 26, Salatino et al. teach a method according to claim 24, characterized in that said step of providing said at least one driver electrode comprises a step of metallization. (Salatino et al., Column 7 Lines 19 – 37, Column 10 Lines 10 – 62)
- With regards to claim 27, Salatino et al. teach a method according to claim 24, characterized in that said step of providing said at least one sensing electrode comprises a step of metallization. (Salatino et al., Column 7 Lines 19 – 37, Column 10 Lines 10 – 62)
- With regards to claim 28, Salatino et al. teach a method according to claim 24, characterized in that the method comprises the step of providing at least one guard ring in the vicinity of at said least one sensor electrode. (Salatino et al., Column 7 Lines 38 – 51, Column 7 Line 52 – column 8 Line 18)
- With regards to claim 29, Salatino et al. teach a method according to claim 28, characterized in that the step of providing at least one guard ring

comprises a step of metallization. (Salatino et al., Column 7 Lines 38 – 51, Column 7 Line 52 – column 8 Line 18)

- With regards to claim 30, Salatino et al. teach a method according to claim 28, characterized in that it comprises a step of providing an insulating polymer layer between said at least one guard ring and said at least one sensing electrode. (Salatino et al., Column 7 Line 52 – Column 8 Line 18, Column 8 Line 45 –Column 9 Line 29)
- With regards to claim 31, Salatino et al. teach a method according to claim 24, characterized in that it comprises a step of providing a substrate and connecting said integrated circuit on said substrate before said encapsulating. (Salatino et al., Column 7 Lines 3 – 30, Column 8 Lines 31 – Column 9 Line 29, Column 10 Lines 10 – 62)
- With regards to claim 38, Salatino et al. teach a method according to claim 24, characterized in that said at least one sensing electrode, or said at least one driving electrode, or both are provided with metallization on the surface of the integrated circuit. (Salatino et al., Column 7 Lines 19 – 51, Column 10 Lines 10 – 62)

- With regards to claim 39, Salatino et al. teach a method according to claim 31, characterized in that an electrical connection is provided by wire bonding between the integrated circuit and wiring of the substrate.  
(Salatino et al., Column 7 Lines 3 – 30, Column 8 Lines 31 – Column 9 Line 29, Column 10 Lines 10 – 62)
- With regards to claim 40, Salatino et al. teach a method according to claim 31, characterized in that an electrical connection is provided by metallization between the integrated circuit and wiring of the substrate.  
(Salatino et al., Column 7 Lines 3 – 30, Column 8 Lines 31 – Column 9 Line 29, Column 10 Lines 10 – 62)
- With regards to claim 42, Salatino et al. teach a method according to claim 24, characterized in that a polymer layer is provided by injection molding using micro replicated mold. (Salatino et al., Column 8 Line 45 – Column 9 Line 51)
- With regards to claim 43, Salatino et al. teach a method according to claim 24, characterized in that the process comprises the steps of providing polymer layers and at least one metallization layer one upon the other.  
(Salatino et al., Column 7 Lines 3 – 30, Column 8 Lines 31 – Column 9 Line 29, Column 10 Lines 10 – 62)

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 4, 14, 15, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salatino et al. U.S. Patent No. 5,862,248 as applied to claim 1 and 2 above, and further in view of Benkley U.S. Patent No. 7,099,496.

- With regards to claim 4, Salatino et al. teach an arrangement according to claim 2. Salatino et al. fail to teach an arrangement characterized in that said substrate is a flexible film. Benkley teaches an arrangement characterized in that said substrate is a flexible film. (Benkley, Abstract, Fig. 5, Column 9 Line 36 – column 10 Line 19) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the

teachings of Salatino et al. with the teachings of Benkley. This modification would have been prompted in order to allow for a stronger, more resilient, fingerprint sensor due to the pressures places upon the sensor surface from a person's finger. The added flexibility would also allow for the sensor to be integrated into smaller more compact spaces, and devices on which a flat surface is not available.

- With regards to claim 14, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fail to teach an arrangement characterized in that the surface of said sensor has a curved form in at least two dimensions. Benkley teaches an arrangement characterized in that the surface of said sensor has a curved form in at least two dimensions. (Benkley, Fig. 5, Column 9 Line 36 – Column 10 Line 19) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. with the teachings of Benkley. This modification would have been prompted in order to improve the quality of the fingerprint image by obtaining a complete image of the entire finger surface. (Benkley, Column 10 Lines 2 - 3)
- With regards to claim 15, Salatino et al. in view of Benkley teach an arrangement according to claim 14. Salatino et al. fail to teach an arrangement characterized in that said form approximates the form of a

finger. Benkley teaches an arrangement characterized in that said form approximates the form of a finger. (Benkley, Fig. 5, Column 9 Line 36 – Column 10 Line 19)

- With regards to claim 19, Salatino et al. teach an arrangement according to claim 18. Salatino et al. teach an arrangement characterized in that said measurement circuit is adapted to measure successive signals while the finger moves in a perpendicular direction in relation to said row of sensing electrodes, for providing a two dimensional matrix of capacitive measurement results from the finger. Benkley teaches an arrangement characterized in that said measurement circuit is adapted to measure successive signals while the finger moves in a perpendicular direction in relation to said row of sensing electrodes, (Benkley, Column 7 Lines 17 – 44, Column 11 Lines 1 - 25) for providing a two dimensional matrix of capacitive measurement results from the finger. (Benkley, Column 16 Lines 25 - 58) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Benkley. This modification would have been prompted in order to reduce the overall size of the sensor by only requiring a few rows of sensor electrodes or as few as 1 row, allowing for the arrangement to become more compact and suitable for being incorporated into smaller electronic devices.

8. Claim 5-8 and 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salatino et al. U.S. Patent No. 5,862,248 as applied to claims 1 and 31 above, and further in view of Watanabe Takaya JP 06-104641 A.

- With regards to claim 5, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fails to specifically teach an arrangement characterized in that it comprises a substrate comprising wiring for an external connection to the integrated circuit. Watanabe Takaya teaches an arrangement characterized in that it comprises a substrate comprising wiring for an external connection to the integrated circuit. (Watanabe, Paragraphs 0013-0014, 0019, 0024, and 0027) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Watanabe Takaya. This modification would have been prompted in order to allow for connection of electrical components not integrated into the device which therefor may allow for the device to placed into devices where space is limited.
- With regards to claim 6, Salatino et al. in view of Watanabe Takaya teach an arrangement according to claim 5. Salatino et al. teach an arrangement characterized in that it comprises wire bonding between the integrated

circuit and wiring of the substrate. (Salatino et al., Column 8 Line 45 – Column 9 Line 51, Column 10 Lines 10 - 30)

- With regards to claim 7, Salatino et al. in view of Watanabe Takaya teach an arrangement according to claim 5. Salatino et al. teach an arrangement characterized in that it comprises metallization between the integrated circuit and wiring of the substrate. (Salatino et al., Column 7 Lines 19 – 51, Column 10 Lines 10 – 62)
  
- With regards to claim 8, Salatino et al. in view of Watanabe Takaya teach an arrangement according to claim 5. Salatino et al. fail to teach an arrangement characterized in that said substrate is flexible film. (Watanabe, Paragraphs 0011, 0013-0014) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. in view of Watanabe Takaya to include the teachings of Watanabe Takaya. This modification would have been prompted in order to allow for a stronger, more resilient, fingerprint sensor due to the pressures placed upon the sensor surface from a person's finger. The added flexibility would also allow for the sensor to be integrated into smaller more compact spaces, and devices on which a flat surface is not available.



- With regards to claim 35, Salatino et al. teach a method according to claim 31. Salatino et al. fail to teach a method characterized in that said substrate is flexible and includes wiring. Watanabe Takaya teaches a method characterized in that said substrate is flexible and includes wiring. (Watanabe, Paragraphs 0013-0014, 0019, 0024, and 0027) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Watanabe. This modification would have been prompted in order to allow for a stronger, more resilient, fingerprint sensor due to the pressures placed upon the sensor surface from a person's finger. The added flexibility would also allow for the sensor to be integrated into smaller more compact spaces, and devices on which a flat surface is not available.
  
- With regards to claim 36, Salatino et al. in view of Watanabe Takaya teach a method according to claim 35. Salatino et al. fail to teach a method characterized in that an end of said flexible substrate is used for an electrically connecting external circuits to the fingerprint sensor. Watanabe Takaya teaches a method characterized in that an end of said flexible substrate is used for an electrically connecting external circuits to the fingerprint sensor. (Watanabe, Paragraphs 0013-0014, 0019, 0024, and 0027) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include

the teachings of Watanabe Takaya. This modification would have been prompted in order to allow for connection of electrical components not integrated into the device which therefor may allow for the device to be placed into devices where space is limited.

- With regards to claim 37, et al. in view of Watanabe Takaya teach a method according to claim 35. Salatino et al. fail to teach a method characterized in that wiring of said flexible substrate is used for providing said at least one sensing electrode, for providing said at least one driving electrode, or both. Watanabe Takaya teaches a method characterized in that wiring of said flexible substrate is used for providing said at least one sensing electrode, for providing said at least one driving electrode, or both. (Watanabe, Paragraphs 0013-0014, 0019, 0024, and 0027)

9. Claims 20 – 23 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salatino et al. U.S. Patent no. 5,862,248 as applied to claims 1 and 24 above, and further in view of Harkin U.S. Patent No. 6,327,376.

- With regards to claim 20, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fail to teach an arrangement characterized in that the arrangement further comprises a infrared light source, a infrared light detector and second measurement means for measuring absorption of

infrared light from the finger. Harkin teaches an arrangement characterized in that the arrangement further comprises a infrared light source, (Harkin, Column 7 Line 55 – Column 8 Line 29) a infrared light detector (Harkin, Column 7 Line 55 – Column 8 Line 29) and second measurement means for measuring absorption of infrared light from the finger. (Harkin, Column 7 Line 55 – Column 8 Line 29) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Harkin. This modification would have been prompted in order to increase “the security of recognition or authentication by providing further validation and reducing the possibility of fraudulent deception through uses, for example, of a replica finger.” (Harkin, Column 8 Lines 40 - 44)

- With regards to claim 21, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fail to teach an arrangement characterized in that said arrangement further comprises a temperature sensor for measuring the temperature from the finger. Harkin teaches an arrangement characterized in that said arrangement further comprises a temperature sensor for measuring the temperature from the finger. (Harkin, Column 8 Lines 24 - 29) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Harkin. This modification would have been

prompted in order to increase "the security of recognition or authentication by providing further validation and reducing the possibility of fraudulent deception through uses, for example, of a replica finger." (Harkin, Column 8 Lines 40 - 44)

- With regards to claim 22, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fail to teach an arrangement characterized in that said arrangement further comprises a humidity sensor for sensing humidity of the finger. Harkin teaches an arrangement comprising additional biosensors capable of detecting biometric characteristics. (Harkin, Column 8 Lines 1 – 44) Harkin does not specifically teach a humidity sensor for sensing ambient humidity but does teach the use of a variety of biosensors, temperature, pulse, oxygen, and leaves it open for "other kinds of biosensors...". The Examiner takes official notice of the fact that the inclusion of additional biosensor(s) such as a humidity sensor is well known in the art. Therefore it would have been obvious to include a humidity sensor into the arrangement of Salatino et al. This modification would have been prompted in order to increase "the security of recognition or authentication by providing further validation and reducing the possibility of fraudulent deception through uses, for example, of a replica finger." (Harkin, Column 8 Lines 40 - 44)

- With regards to claim 23, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fail to teach a mobile terminal, characterized in that it includes a fingerprint sensor arrangement according to claim 1. Harkin teaches an arrangement in which a sensor arrangement is included in a mobile terminal. (Harking, Column 10 Lines 15 – 50) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Harkin. This modification would have been prompted in order to incorporate an added level of security into personal portable electronic devices.
  
- With regards to claim 44, Salatino et al. teach a method according to claim 24. Salatino et al. fail to teach a method characterized in that the fingerprint sensor is embedded into an equipment cover. Harkin teaches a method characterized in that the fingerprint sensor is embedded into an equipment cover. (Harking, Column 10 Lines 15 – 50) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. to include the teachings of Harkin. This modification would have been prompted in order to incorporate an added level of security into personal portable electronic devices.

10. Claims 16-17, 33-34, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Salatino et al. U.S. Patent No. 5,862,248 as applied to claim 1 above, and further in view of Mathiassen et al. U.S. Patent No. 7,251,351.

- With regards to claim 16, Salatino et al. teach an arrangement according to claim 1. Salatino et al. fail to teach an arrangement characterized in that the arrangement comprises a bump for elevating the electrodes. Mathiassen et al. teach an arrangement characterized in that the arrangement comprises a bump for elevating the electrodes. (Mathiassen et al., Column 3 Line 65 – Column 4 Line 61) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. with the teachings of Mathiassen et al. This modification would have been prompted in order to allow for “a very compact” device. (Mathiassen et al., Column 4 Lines 2 – 3)
- With regards to claim 17, Salatino et al. in view of Mathiassen et al. teach an arrangement according to claim 16. Salatino et al. fail to teach an arrangement characterized in that said bump is a layer of polymer. Mathiassen et al. teach an arrangement characterized in that said bump is a layer of polymer. (Mathiassen et al., Column 3 Line 65 – Column 4 Line 61)

- With regards to claim 33, Salatino et al. teach a method according to claim 24. Salatino et al. fail to teach a method characterized in that the method comprises a step of providing an elevating bump between said substrate and the electrodes. Mathiassen et al. teach a method characterized in that the method comprises a step of providing an elevating bump between said substrate and the electrodes. (Mathiassen et al., Column 3 Line 65 – Column 4 Line 61) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. with the teachings of Mathiassen et al. This modification would have been prompted in order to allow for “a very compact” device. (Mathiassen et al., Column 4 Lines 2 – 3)
- With regards to claim 34, Salatino et al. in view of Mathiassen et al. teach a method according to claim 33. Salatino et al. fail to teach a method characterized in that said bump is made of a layer of polymer. Mathiassen et al. teach a method characterized in that said bump is made of a layer of polymer. (Mathiassen et al., Column 3 Line 65 – Column 4 Line 61)
- With regards to claim 41, Salatino et al. teach a method according to claim 24. Salatino et al. fail to teach a method characterized in that conductive bumps are connected with a flip chip process to a metallization of a substrate or the integrated circuit for providing external electrical

connections to the integrated circuit. Mathiassen et al. teach a method characterized in that conductive bumps are connected with a flip chip process to a metallization of a substrate or the integrated circuit for providing external electrical connections to the integrated circuit. (Mathiassen et al., Column 3 Line 65 – Column 4 Line 61, Column 6 Lines 20 - 41) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. with the teachings of Mathiassen et al. This modification would have been prompted in order to allow for external components to be combined with a fingerprint sensor device and also to obtain “a very compact” device. (Mathiassen et al., Column 4 Lines 2 – 3)

11. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Salatino et al. U.S. Patent No. 5,862,248 as applied to claim 31 above, and further in view of Mainguet U.S. Patent No. 6,289,114.

- With regards to claim 32, Salatino et al. teach a method according to claim 31. Salatino et al. fail to teach a method characterized in that the method comprises a step of providing an aperture in said substrate for providing an electrical connection through the substrate. Mainguet teaches a method characterized in that the method comprises a step of providing an aperture in said substrate for providing an electrical connection through



the substrate. (Mainguet, Fig. 3, Column 6 Lines 29 – 67) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Salatino et al. with the teachings of Mainguet. This modification would have been prompted in order to connect electrodes to charge reading circuits between layers of a substrate which protect the reading circuits from erroneous measurements providing a more reliable output of the sensed finger.

### ***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Mainguet U.S. Patent No. 6,289,114; which is directed to a fingerprint reading system.
- Raynal et al. U.S. Patent No. 6,643,389; which is directed to a narrow array capacitive fingerprint imager.
- Kim U.S. Publication No. 2003/0210809 A1; which is directed to an apparatus and method for sensing the degree and touch strength of a human body on a sensor.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC RUSH whose telephone number is (571)270-3017. The examiner can normally be reached on 7:30AM - 5:00PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samir Ahmed can be reached on (571) 272-7413. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ER

/Samir A. Ahmed/  
Supervisory Patent Examiner, Art Unit 2624